



# Department of Energy

Ohio Field Office  
Fernald Area Office

P. O. Box 538705  
Cincinnati, Ohio 45253-8705  
(513) 648-3155



SEP 22 1997

DOE-1451-97

Mr. James A. Saric, Remedial Project Manager  
U.S. Environmental Protection Agency  
Region V-SRF-5J  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager  
Ohio Environmental Protection Agency  
401 East 5th Street  
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

## CARBONATE TESTING RESULTS FOR ON-SITE DISPOSAL FACILITY GRANULAR DRAINAGE MATERIAL

Reference: Letter, from J. Saric to J. Reising, "Carbonate Content of OSDF Drainage Layer," dated July 24, 1997

As requested in the above referenced letter, enclosed is documentation confirming the results of the Carbonate Content Testing.

The Ohio Solid Waste Disposal Regulations require that the drainage layer for the leachate management system of the On-Site Disposal Facility (OSDF) be composed of granular material that does not contain carbonate material. Due to the regional geology this requirement cannot reasonably be met, so concurrence was received from the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA) to implement an OEPA interpretation on the carbonate content of granular drainage material. This interpretation requires that the granular drainage material used in the liner not have a carbonate content greater than or equal to five percent by weight, and the granular drainage material in the cap system not have a carbonate content greater than or equal to ten percent by weight. These percentages are determined using the American Society of Testing and Materials (ASTM) 3042 at a pH of 4.0.

This letter transmits the first group of test results on the granular drainage material that will be used in construction of the leachate collection system and leak detection system for Cell 1 of the OSDF. These tests were performed to approve the vendor's material as acceptable for use in the OSDF. Conformance testing at a frequency of one test for every

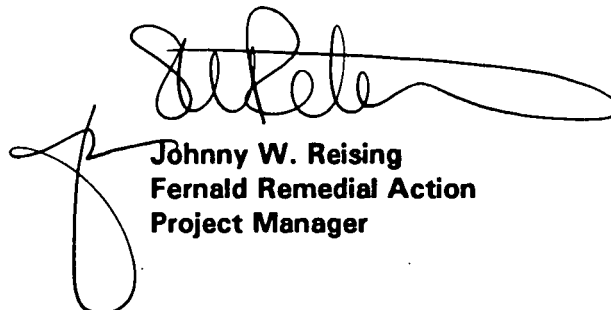
5,000 cubic yards will be performed before granular drainage material is placed into the liner system. These results will be transmitted as they become available. The current test results are as follows:

Material Size	Percent Carbonate
No. 57 Gravel (2 samples)	0.2
	0.1
No. 78 Gravel (3 samples)	0.2
	0.16
	0.14

The carbonate data reports are enclosed to this letter.

If there are any questions regarding this transmittal, please contact Jay Jalovec at (513) 648-3122.

Sincerely,



Johnny W. Reising  
Fernald Remedial Action  
Project Manager

FEMP:Jalovec

Enclosures: As Stated

**cc w/encs:**

G. Jablonowski, USEPA-V, 5HRE-8J  
R. Beaumier, TPSS/DERR, OEPA-Columbus  
T. Schneider, OEPA-Dayton (3 copies total of enc.)  
F. Bell, ATSDR  
D. S. Ward, GeoTrans  
R. Vandegrift, ODOH  
F. Barker, Tetra Tech  
T. Hagen, FDF/65-2  
J. Harmon, FDF/90  
AR Coordinator, FDF/78

**cc w/o encs:**

N. Hallein, EM-42/CLOV  
J. Jalovec, DOE-FEMP  
S. Peterman, DOE-FEMP  
J. Reising, DOE-FEMP  
R. Warner, DOE-FEMP  
D. Carr, DOE-FEMP  
R. Heck, FDF/2  
M. Hickey, FDF/64  
S. Hinnefeld, FDF/2  
U. Kumthekar, FDF/64  
T. Walsh, FDF/65-2  
EDC, FDF/52-7

**SUPPLIER SUBMITTAL No.: 053 (Rev. 0)**

**TEST RESULTS OF GRANULAR DRAINAGE MATERIAL  
(#57 STONE)  
Section 02710-1.04.A. 2**

**FLUOR DANIEL FERNALD SUBCONTRACT No. FSC 597  
ON-SITE DISPOSAL FACILITY (PHASE I) PROJECT**

**Document No. PET-061 (Rev. 0)**

**July 29, 1997**

**BOWSER-MORNER, INC.****1003**

CORPORATE: 4518 Taylorsville Road • P. O. Box 51 • Dayton, Ohio 45401 • 937/236-8805

**LABORATORY REPORT**

**Report To:** Martin Marietta Aggregates  
Attn: Mr. James Martin  
16 State Route 126  
Loveland, Ohio 45140

**Date** July 25, 1997  
**Report No.** 003473  
**W.O. No.** 111730

**Report On:** Laboratory Analysis of Two No. 57 Gravel Samples - Miamitown, Ohio Quarry

On July 18, 1997, two samples of No. 57 gravel were submitted for selected laboratory analysis. Testing was performed as specified by the client and in accordance with the following procedures:

ASTM C136, "Sieve Analysis of Fine and Coarse Aggregates."

ASTM D2434, "Permeability of Granular Soils (Constant Head)".

ASTM D2487, "Classification of Soils for Engineering Purposes (Unified Soil Classification System)".

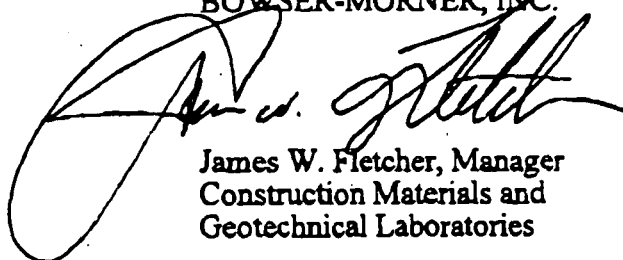
ASTM D3042, "Insoluble Residue in Carbonate Aggregates". (modified to pH4)

Results are summarized in Table I and detailed on the attached data sheets.

Should you have any questions, or if we may be of further service, please contact us at (937) 236-8805.

Respectfully Submitted,

BOWSER-MORNER, INC.



James W. Fletcher, Manager  
Construction Materials and  
Geotechnical Laboratories

JWF/dec  
003473  
1-Client  
1-File  
1-Chris Gross  
Fax 513-871-6367

W.O. No. 111730  
 Report No. 003473  
 July 25, 1997  
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## Martin Marietta Aggregates

**Table I**  
 Summary of Results

Sieve Size	No. 57 Gravel Ref. No. 09730	No. 57 Gravel Ref. No. 09731	Spec*	
	% Passing			
37.5mm (1 1/2")	100	100	100	
25.0mm (1")	100	100	95-100	
19.0mm (3/4)	88	86	---	
12.5mm (1/2")	52	41	25-60	
9.5mm (3/8")	12	7	---	
4.75mm (#4)	0.4	0.4	0-10	
2.36mm (#8)	0.4	0.4	0-5	
0.075mm (#200) Decant, %	0.8	0.7	0-2	
Permeability, cm/sec:	14.1	14.0	10 cm/sec	min
Insoluble Residue, %:	99.8	99.9	---	
Acid Soluble, %:	0.2	0.1	5%	max
USCS Classification:	"GP" poorly graded GRAVEL	"GP" poorly graded GRAVEL		

\*Specification submitted by client.

**SUPPLIER SUBMITTAL No.: 043 (Rev. 0)**

**SOURCE OF GRANULAR DRAINAGE MATERIAL,  
TEST RESULTS, & 50 lb. SAMPLE  
Section 02710-1.04.A (1-3)**

**FLUOR DANIEL FERNALD SUBCONTRACT No. FSC 597  
ON-SITE DISPOSAL FACILITY (PHASE I) PROJECT**

Document No. PET-046A (Rev. 0)  
Document No. PET-046B (Rev. 0)  
Document No. PET-046C (Rev. 0)

**INFORMATION  
ONLY**

July 3, 1997



*Sample*

H.C. Nutting Company  
4120 Airport Road  
Cincinnati, Ohio 45226  
6/25/97smo

Highland Stone Division  
Fluor Daniel-Fernald  
HCN W.O. # 03701.024

**TABLE I**  
**TABULATION OF CONSTANT HEAD-FIXED WALL PERMEABILITY TEST DATA**

Lab No.	Sample No.	Calcium Carbonate Content, % Loss with pH of 4	Dry Density (Lbs./Ft)	Total Head P.S.I.	Initial(I) Final(F) Natural W.C. %	(K) CM/Sec.	Material Description
4760	Samp.1	0.200					CRUSHED NO. 78'S
4761	Samp.1	---	101.2	1.06	0.3(I) 3.5(F)	0.81	CRUSHED NO. 78'S Remolded Tight
4763	Samp.2	0.160					CRUSHED NO. 78'S
4764	Samp.2	---	100.2	1.06	0.3(I) 3.4(F)	0.92	CRUSHED NO. 78'S Remolded Tight
4766	Samp.3	0.140					CRUSHED NO. 78'S
4767	Samp.3	---	100.2	1.06	0.3(I) 3.7(F)	0.90	CRUSHED NO. 78'S Remolded Tight

per-6-25

H.C. NUTTING COMPANY



Robert L. House,  
Vice President/Lab. Director

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